REMARKS

Claims 1-22 are pending in the application and have been examined. Claims 1-22 stand rejected. Claims 1 and 14 have been amended. Claim 22 has been canceled. Reconsideration and allowance of Claims 1-21 is respectfully requested.

The Rejection of Claims 1-18 and 20-22 Under 35 U.S.C. § 102(b) as Being Anticipated by U.S. Patent No. 5,294,549 (Pullman et al.)

Claims 1-18 and 20-22 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,294,549 (Pullman et al.). The Examiner has taken the view that Pullman et al. discloses a medium that comprises the same ingredients as the synchronization medium of the present invention. Applicants disagree with the Examiner's conclusion for the following reasons.

Claim 1, from which Claims 2-18 and 20-22 depend, has been amended to clarify the invention and now recites:

> A method for producing a synchronized population of conifer somatic embryos, the method comprising: (a) cultivating pre-cotyledonary conifer embryogenic cells for a period of at least 0.5 week in, or on, a synchronization medium that comprises an absorbent composition and at least one synchronization agent selected from the group consisting of abscisic acids and a gibberellin, wherein the absorbent composition and the at least one synchronization agent are present at a concentration effective to produce a synchronized population of pre-cotyledonary conifer somatic embryos; and (b) transferring the synchronized population of pre-cotyledonary conifer somatic embryos to a development medium for synchronized cotyledonary embryo development.

Support for this amendment is found throughout the application as filed, for example, at page 2, lines 26-27; page 4, lines 18-28; page 6, lines 25-28; and page 7, lines 10-13. Claim 22 has been canceled.

It is submitted that Pullman et al. does not disclose or suggest the invention as claimed. The Examiner has characterized Pullman et al. as disclosing a method of cultivation of proembryos in a medium with a pH of 5.7 (Col. 13, Table 1) comprising 88.4 mg/L - 132.6 mg/L

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of auxin, 69.36 mg/L - 144.5 mg/L of cytokinins in combination with 0.05% - 1.0% activated charcoal (Col. 7, lines 24-28).

Applicants note that the passages of Pullman et al. relied on by the Examiner fail to teach or suggest a medium comprising abscisic acid or gibberellin and an absorbent composition. For example, Table 1 (Col. 13) relied on by the Examiner shows a basic culture media that does not include either abscisic acid or gibberelin, nor does it include an absorbent composition, as required by Claim 1. The Examiner then cites Col. 7, lines 24-28, as disclosing a medium containing auxin, cytokines and activated charcoal. Applicants wish to point out that the medium described at Col. 7, lines 24-28, does not include abscisic acid or gibberellin. Applicants further note that none of the pre-development stage media formulations shown in Table 2 of Pullman et al. include an absorbent composition (i.e., activated charcoal) and at least one of abscisic acid or gibberellin, as claimed.

Moreover, the cited reference fails to teach or suggest the step of cultivating pre-cotyledonary embryos in or on a medium comprising abscisic acid or gibberellin and an absorbent composition for a period of at least 0.5 week followed by transfer to a development medium, as claimed. Therefore, the cited reference does not anticipate the claimed invention because the reference fails to teach or suggest all the elements of the claimed invention.

It is further submitted that the claimed invention is not rendered obvious in view of the teaching of Pullman et al. because there is no motivation or suggestion to modify the methods described in Pullman et al. to produce a synchronized population of conifer somatic embryos, as claimed. As recognized by those of skill in the art, "[c]omposition of the media used to imitate embryogenesis and induce embryo maturation are critical to success, regardless of the species being propagated." Pullman et al., Col. 2, lines 61-63. It is well known in the art that somatic embryogenesis comprises a multi-stage culturing process, with specific media requirements for

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each stage of the process. For example, see Pullman et al. at Col. 6, line 18, to Col. 10, line 40. As described in Pullman et al., "the basal media (described in Table 1) are modified for each of the various culturing stages as shown in Table 2." Pullman et al., page 11, lines 45-46. As shown in Table 2, Stage I to Stage VI media are disclosed. As known by those of skill in the art, it is important to use the appropriate media at each stage of development, as evidenced by the description of the various stages of embryo growth and development in Pullman et al., which are briefly summarized below.

As described in Pullman et al., embryongenic callus or embryonal-suspensor mass is first placed on an induction or initiation culture medium, such as "Stage I Initiation Medium" (shown in Table 2), to produce early stage proembryos (shown in FIG. 1). See Col. 6, lines 22-64. The Stage I Initiation medium typically includes plant growth hormones, such as auxin and cytokinins, and may also include activated charcoal. See Pullman et al., Col. 6, lines 50-64, and Stage I medium, Table 2. The early stage proembryos are then transferred to a Stage II maintenance and multiplication medium, followed by transfer to a Stage III second maintenance medium, to produce late stage proembryos (shown in FIG. 2). See, *e.g.*, Col. 14, lines 55-59, lines 65-68, and Table 2. Following late proembryo development, the cultures are typically transferred to Stage IV medium (Table 2) for a singulation step to singulate the proembryos that have formed into clumps. See, *e.g.*, Col. 8, lines 17-23. The singulated late stage proembyros are then transferred to Stage V development medium (Table 2) to complete their development to cotyledonary embryos (shown in FIG. 3).

In contrast to the methods described in Pullman et al., the methods of the present invention are directed to cultivating the pre-cotyledonary conifer embryogenic cells in a synchronization medium for a period of at least 0.5 week to produce a synchronized population of pre-cotyledonary conifer somatic embryos and transferring the synchronized population of

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embryos to a development medium. As described in the instant specification, the methods of the present invention:

> produce a higher yield of conifer somatic embryos than an equivalent method in which the embryogenic cells are not cultivated in a synchronization medium. For example, according to the embodiment set forth in EXAMPLE 1, the yield is typically about 90 conifer somatic embryos per 100mg (fresh weight) of cultured plant tissue in maturation medium. This contrasts with a yield of about 40 conifer somatic embryos per 100 mg (fresh weight) of cultured plant tissue in maturation medium, using an identical method that does not include the step of cultivating conifer embryogenic cells in, or on, a synchronization agent selected from the group consisting of abscisic acid and gibberellins.

Specification at page 11, lines 14-23.

For at least the reasons described above, it is submitted that the claimed invention is not anticipated nor rendered obvious by Pullman et al. Withdrawal of this ground of rejection is respectfully requested.

The Rejection of Claim 19 Under 35 U.S.C. § 103(a) as Being Unpatentable Over U.S. Patent No. 5,294,549 (Pullman et al.)

Claim 19 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,294,549 (Pullman et al.). Claim 19 depends from Claim 1, which has been amended as described above.

It is submitted that the Examiner has failed to establish a *prima facie* case of obviousness because Pullman et al. fails to disclose or suggest all the claimed elements of the claimed invention. For at least the reasons described above, amended Claim 1 is neither anticipated nor rendered obvious over the Pullman et al. reference. Moreover, as previously acknowledged, Pullman et al. fails to teach the production of Loblolly pine embryos as required by Claim 19. Therefore, the cited reference fails to teach or suggest all the elements of the invention as claimed. Removal of this ground of rejection is respectfully requested.

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The Obviousness-Type Double Patenting Rejection

The Examiner has provisionally rejected Claims 1, 8, and 9 over Claims 17-21 of co-pending Application No. 10/405,819. Applicants will submit a terminal disclaimer over co-pending Application No. 10/405,819 upon a finding of an allowable claim.

CONCLUSION

In view of the foregoing remarks, applicants respectfully submit that all the pending claims are in condition for allowance. If any issues remain that may be expeditiously addressed in a telephone interview, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,

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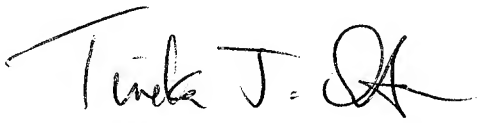

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